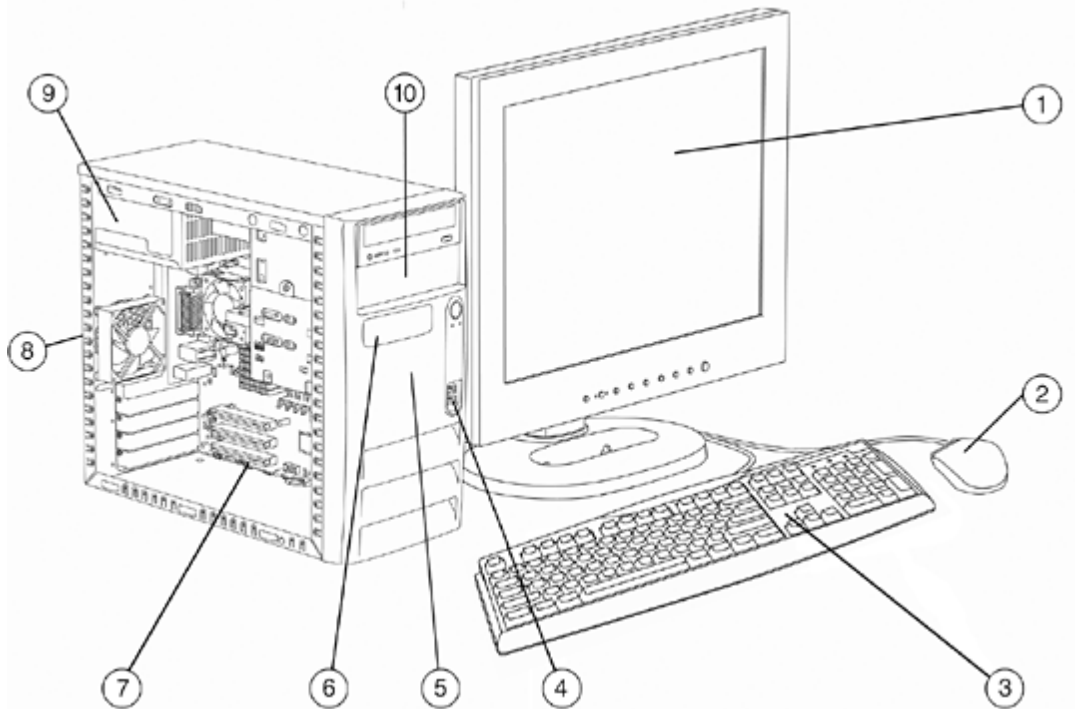


Overview

Microtower

35.5 x 18.0 x 39.6 centimeters / 14.0 x 7.1 x 15.6 inches



- | | |
|---|--|
| 1. Monitor (sold separately) | 6. 3.5" external bay for optional diskette drive or other 3.5" device |
| 2. 2-Button Scroll Mouse | 7. 3 full-height PCI slots |
| 3. Basic Windows Keyboard | 8. 4 USB 2.0, 1 serial port, 1 parallel port, 2 PS/2, 1 RJ-45, 1 VGA, audio in/out |
| 4. 3.5" external bay for optional diskette drive or other 3.5" device | 9. 250-watt max power supply |
| 5. 2 internal 3.5" bays | 10. 2-5.25" external bays for optional optical drives |

At A Glance

- Intel® Pentium® 4 and Celeron® processors
- Choice of operating systems:
 - Genuine Windows XP Home
 - Genuine Windows XP Professional
 - Turbolinux 10D (delivered on CDs with system, not pre-installed)
 - Mandrake Linux 9.2 (delivered on CDs with system, not pre-installed)
- Intel Extreme Graphics 2
- Integrated Intel PRO/100 Network Connection
- Ultra ATA Hard Drives
- Choice of optical drives
- DDR SDRAM system memory
- Single or dual channel memory configurations
- Integrated audio, including an internal PC speaker
- Energy Star compliant with energy-saving features
- Protected by HP Services, including a 1-1-1 standard warranty. Terms and conditions vary by country. Certain restrictions and exclusions apply.

Overview

What's New

- Intel® 865GV chipset
- Choice of operating systems:
 - Genuine Windows XP Home
 - Genuine Windows XP Professional
 - Turbolinux 10D (delivered on CDs with system, not pre-installed)
 - Mandrake Linux 9.2 (delivered on CDs with system, not pre-installed)
- Integrated Intel PRO/100 Network Connection
- PC3200 (400MHz) DDR SDRAM
- Dual Channel memory configurations

Standard Features - Select Models

Smart Buy Promotion Models

EE003AA#ABA	PROMO dx2000M/C325/40anc/128F/3
EE004AA#ABA	PROMO dx2000M/C325/40anc/256F/4
PX836AA#ABA	PROMO dx2000M/P2.8A/40anc/256F4u
PX837AA#ABA	PROMO dx2000M/P2.8A/40anr/256F4u
PX838AA#ABA	PROMO dx2000M/P2.8A/40anc/512G4u
PX839AA#ABA	PROMO dx2000M/P2.8A/40anw/512G4u

Standard Models

PQ067A#ABA	HP Compaq dx2000 Microtower, Mandrake Linux 9.2, Intel 845GV chipset, Intel Celeron D 320 2.4GHz, 533MHz Front Side Bus, 256KB L2 cache, 128MB PC2700 DDR (1x128), Integrated Intel Extreme Graphics, 40GB Ultra ATA Hard Drive (5400 rpm), 48X CD-ROM Drive, No Floppy Drive, Integrated audio with internal speaker, Integrated Broadcom 10/100 networking, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
PQ070A#ABA	HP Compaq dx2000 Microtower, Genuine Microsoft Windows XP Professional SP2, Intel 865GV chipset, Intel Celeron D 325 2.66GHz, 533MHz Front Side Bus, 256KB L2 cache, 256MB Dual-Channel PC3200 DDR (2x128), Integrated Intel Extreme Graphics, 40GB Ultra ATA Hard Drive (5400 rpm), 48X CD-ROM drive, 1.44MB Floppy Drive, Integrated audio with internal speaker, Integrated Intel 10/100 networking, Microsoft Works 7.0, Norton Antivirus 2004, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
PQ072A#ABA	HP Compaq dx2000 Microtower, Genuine Microsoft Windows XP Professional SP2, Intel 865GV chipset, Intel Celeron D 325 2.66GHz, 533MHz Front Side Bus, 256KB L2 cache, 512MB Dual-Channel PC3200 DDR (2x256), Integrated Intel Extreme Graphics, 40GB Ultra ATA Hard Drive (7200 rpm), 48X Combo Drive (CD-RW & DVD-ROM), 1.44MB Floppy Drive, Integrated audio with internal speaker, Integrated Intel 10/100 networking, Microsoft Works 7.0, Norton Antivirus 2004, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
PX840AA#ABA	HP Compaq dx2000 Microtower, Mandrake Linux 9.2 Installation CD, Intel 865GV chipset, Intel Pentium 4 2.80GHz, 533MHz Front Side Bus, 512KB L2 cache, 256MB PC3200 DDR (1x256), Integrated Intel Extreme Graphics, 40GB Ultra ATA Hard Drive (5400 rpm), 48X CD-ROM drive, No Floppy Drive, Integrated audio with internal speaker, Integrated Intel 10/100 networking, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
PX841AA#ABA	HP Compaq dx2000 Microtower, Genuine Microsoft Windows XP Professional SP2, Intel 865GV chipset, Intel Pentium 4 2.80GHz, 533MHz Front Side Bus, 512KB L2 cache, 256MB PC3200 DDR (1x256), Integrated Intel Extreme Graphics, 40GB Ultra ATA Hard Drive (5400 rpm), 48X CD-ROM drive, 1.44MB Floppy Drive, Integrated audio with internal speaker, Integrated Intel 10/100 networking, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, Microsoft Works 7.0, Norton Antivirus 2004, 1-year Parts, 1-year Labor, 1-year Onsite warranty
PX842AA#ABA	HP Compaq dx2000 Microtower, Genuine Microsoft Windows XP Professional SP2, Intel 865GV chipset, Intel Pentium 4 2.80GHz, 533MHz Front Side Bus, 512KB L2 cache, 256MB PC3200 DDR (1x256), Integrated Intel Extreme Graphics, 40GB Ultra ATA Hard Drive (7200 rpm), 48X/32X/48X CD-ROM drive, 1.44MB Floppy Drive, Integrated audio with internal speaker, Integrated Intel 10/100 networking, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, Microsoft Works 7.0, Norton Antivirus 2004, 1-year Parts, 1-year Labor, 1-year Onsite warranty

Standard Features - Select Models

PJ998A#ABA	HP Compaq dx2000 Microtower, Mandrake Linux 9.2 Installation CD, Intel 865GV chipset, Intel Pentium 4 3.06GHz with HyperThreading, 800MHz Front Side Bus, 1MB L2 cache, 256MB Dual-Channel PC3200 DDR (2x128), Integrated Intel Extreme Graphics, 40GB Ultra ATA Hard Drive (5400 rpm), 48X CD-ROM drive, No Floppy Drive, Integrated audio with internal speaker, Integrated Intel 10/100 networking, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
DW978A#ABA	HP Compaq dx2000 Microtower, Genuine Microsoft Windows XP Professional SP2, Intel 865GV chipset, Intel Pentium 4 3.06GHz with HyperThreading, 800MHz Front Side Bus, 1MB L2 cache, 256MB Dual-Channel PC3200 DDR (2x128), Integrated Intel Extreme Graphics, 40GB Ultra ATA Hard Drive (5400 rpm), 48X CD-ROM drive, 1.44MB Floppy Drive, Integrated audio with internal speaker, Integrated Intel 10/100 networking, Microsoft Works 7.0, Norton Antivirus 2004, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
DW979A#ABA	HP Compaq dx2000 Microtower, Genuine Microsoft Windows XP Professional SP2, Intel 865GV chipset, Intel Pentium 4 3.06GHz with HyperThreading, 800MHz Front Side Bus, 1MB L2 cache, 256MB Dual-Channel PC3200 DDR (2x128), Integrated Intel Extreme Graphics, 40GB Ultra ATA Hard Drive (7200 rpm), 48X Combo Drive (CD-RW & DVD-ROM), 1.44MB Floppy Drive, Integrated audio with internal speaker, Integrated Intel 10/100 networking, Microsoft Works 7.0, Norton Antivirus 2004, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty
DW980A#ABA	HP Compaq dx2000 Microtower, Genuine Microsoft Windows XP Professional SP2, Intel 865GV chipset, Intel Pentium 4 3.06GHz with HyperThreading, 800MHz Front Side Bus, 1MB L2 cache, 512MB Dual-Channel PC3200 DDR (2x256), Integrated Intel Extreme Graphics, 80GB Ultra ATA Hard Drive (7200 rpm), 48X Combo Drive (CD-RW & DVD-ROM), 1.44MB Floppy Drive, Integrated audio with internal speaker, Integrated Intel 10/100 networking, Microsoft Works 7.0, Norton Antivirus 2004, Standard PS/2 Keyboard, 2-button PS/2 Scroll Mouse, 1-year Parts, 1-year Labor, 1-year Onsite warranty

Available Technology and Features

Processors

Intel Celeron D Processors:

Intel Celeron D 320 Processor (2.40-GHz, 256K L2 cache, 533-MHz FSB)
Intel Celeron D 325 Processor (2.53-GHz, 256K L2 cache, 533-MHz FSB)
Intel Celeron D 330 Processor (2.66-GHz, 256K L2 cache, 533-MHz FSB)
Intel Celeron D 335 Processor (2.80-GHz, 256K L2 cache, 533-MHz FSB)
Intel Celeron D 340 Processor (2.93-GHz, 256K L2 cache, 533-MHz FSB)
Intel Celeron D 345 Processor (3.06-GHz, 256K L2 cache, 533-MHz FSB)

Intel Pentium 4 Processors:

2.80A-GHz, 1-MB L2 cache, 533-MHz FSB

Intel Pentium 4 Processors supporting Hyper-Threading Technology:

2.80E-GHz, 1-MB L2 cache, 800-MHz FSB
3.0E-GHz, 1-MB L2 cache, 800-MHz FSB
3.20E-GHz, 1-MB L2 cache, 800-MHz FSB
3.40E-GHz, 1-MB L2 cache, 800-MHz FSB

Operating Systems and Application Software

Genuine Windows XP Home SP2
Genuine Windows XP Professional SP2
Mandrake Linux 9.2 (delivered on CDs with system, not pre-installed)
Turbolinux 10D (delivered on CDs with system, not pre-installed)

Microsoft Office 2003 Basic
Microsoft Office 2003 Small Business
Microsoft Office 2003 Professional
Microsoft Works 7.0 (on CD only)
Norton Antivirus 2005 with 60 day Live Update Subscription

Hard Drives

40GB 5400rpm Ultra ATA/100
40GB 7200rpm Ultra ATA/100
80GB 7200rpm Ultra ATA/100
160GB 7200rpm Ultra ATA/100

System Memory - Single Channel Configurations

256MB DDR SDRAM PC2700 (333-MHz) non ECC
512MB DDR SDRAM PC2700 (333-MHz) non ECC

256MB DDR SDRAM PC3200 (400-MHz) non ECC
512MB DDR SDRAM PC3200 (400-MHz) non ECC

Available Technology and Features

**System Memory -
Dual Channel
Configurations**

256MB (2 x 128) DDR SDRAM PC2700 (333-MHz) non ECC
512MB (2 x 256) DDR SDRAM PC2700 (333-MHz) non ECC
1GB (2 x 512) DDR SDRAM PC2700 (333-MHz) non ECC

256MB (2 x 128) DDR SDRAM PC3200 (400-MHz) non ECC
512MB (2 x 256) DDR SDRAM PC3200 (400-MHz) non ECC
1GB (2 x 512) DDR SDRAM PC3200 (333-MHz) non ECC

Removable Storage

1.44-MB diskette drive (optional)
256-MB USB HP Drive Key II (USB 2.0)
512-MB HP Drivekey II (USB 2.0)

Optical Storage

CD-ROM drive
CD-RW drive
DVD-ROM drive
Combo drive (CD-RW & DVD-ROM)
DVD+/-RW drive

Keyboard

Basic Windows PS/2 Keyboard

Mouse

HP PS/2 scroll mouse
HP USB optical scroll mouse

Audio

Integrated SoundMax III audio including an internal PC speaker

Communication

Integrated Intel PRO/100 Network Connection
Optional BroadCom NetXtreme 10/100/1000 Gigabit PCI Ethernet Adapter
Optional PCI High Speed 56K Soft Modem
Optional WL500 PCI 802.11(a/g) Wi-Fi Wireless LAN

Graphics

Intel Extreme Graphics 2 (integrated with the 865GV chipset)

System Details

Base Unit

- uATX microtower chassis, including power supply and front bezel; featuring five (5) drive bays and three PCI expansion slots
- Microsoft or Linux operating system CD
- active type heatsink
- 80 x 80 x 25mm chassis fan
- Motherboard with Intel 865GV chipset, Intel PRO/100 integrated network interface, integrated graphics and audio, 3 ea. PCI slots, 4 ea. DDR DIMM slots
- (2) ATA data cables – (3) headed; each cable supports two drives
- product documentation on CD
- HP system restore CD
- power cord

Slots	PCI 2.3	Three (3) full-height slots on PCA
	Memory Expansion	Four (4) DIMM slots (4.0GB maximum memory support)

Bays	Internal	Two (2) 3.50" half-height
	External	Two (2) 5.25" half-height
		One (1) 3.50" half-height

USB Support	EHCI high-speed USB 2.0 controller
	Two (2) front ports; Six (6) rear ports

Interfaces (Legacy)	One (1) parallel port
	One (1) serial port
	One (1) PS/2 keyboard port
	One (1) PS/2 mouse port
	One (1) analog VGA video port
	One (1) line in; one (1) line out; one (1) mic in
	One (1) RJ45 network port

Weight & Dimensions	Chassis Dimensions	13.98 x 7.09 x 16.14 in (355 x 180 x 410 mm) (H x W x D)
	Packaged Dimensions - Americas	21.57 x 19.92 x 11.34 in (548 x 506 x 288 mm) (L x W x H)
	Packaged Dimensions - Asia	21.73 x 19.29 x 11.61 in (552 x 490 x 295 mm) (L x W x H)
	System Net Weight (not including packaging)	23.15 lb (10.5 kg)
	System Gross Weight (including packaging)	30.86 lb (14 kg)

System Details

Supported Technology & Features

Memory Type	• PC2700 DDR SDRAM (333MHz) non-ECC • PC3200 DDR SDRAM (400MHz) non-ECC • Single or dual channel configurations • 4.0GB maximum system memory
Serial Presence Detect Support	Yes
Hard Drive Interfaces Supported	SMART III Ultra ATA/100
Hard Drive Controller (PCI) Supported	SMART III Ultra ATA/100

Intel Pentium 4 CPU

Coprocessor	Integrated
CPU Socket Type/Number	Socket N 478 pin
CPU Package	mPGA 478
Front Side Bus Speed	400/533/800MHz
Cache Memory	512KB/1MB L2 Advanced Transfer Cache

Intel Pentium 4 CPU with HT Technology

Coprocessor	Integrated
CPU Socket Type/Number	Socket N 478 pin
CPU Package	mPGA 478
Front Side Bus Speed	533/800MHz
Cache Memory	512KB/1MB L2 Advanced Transfer Cache

Intel Celeron D CPU

Coprocessor	Integrated
CPU Socket Type/Number	Socket N 478 pin
CPU Package	mPGA 478
Front Side Bus Speed	533MHz
Cache Memory	256KB L2 Advanced Transfer Cache

System Details

Chassis	Front Panel	• Power button • Power On LED • HDD Activity LED
	Cooling Solutions Supported	• Power Supply Fan (variable speed) • Aluminum active heatsink (variable speed) • Chassis fan (variable speed)
	Slots Supported	Three (3) full-height, half-length PCI slots
	Front I/O	Two (2) USB 2.0 ports
	Rear I/O	Standard uATX I/O connectors, including six (6) USB 2.0 ports
	Drive Bays	• Two (2) 5-1/4" external • One (1) 3-1/2" external • Two (2) 3-1/2" internal
	Internal Speaker	yes
	Power Supply	250 watt ATX Power Supply – PFC/non-PCF with a 115v/230v line switch (varies by country/region)

Unit Environment and Operating Conditions

General Unit Operating Guidelines	
	• Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range. • Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow. • Never restrict airflow into the computer by blocking any vents or air intakes. • Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air. • Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow. • If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.
Temperature Range	Operating: 50° to 95° F (10° to 35° C)* Non-operating: -22° to 140° F(-30° to 60° C)
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient)
Maximum Altitude (unpressurized)	Operating: 10,000 ft (3048 m) Non-operating: 30,000 ft (9144 m)
*NOTE: Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.	

Motherboard

Socket mPGA478B industry standard uATX form factor	
Processor	• Socket 478B; mPGA 478-pin • Support single Intel Pentium 4/Celeron 800/533/400MHz FSB processors
PWM	• ON 3 phase power solution • Meet Intel FMB 1.5 spec
Chipset	• Intel 865GV • Intel ICH5

System Details

Super I/O	• SMSC LPC47M192
Front Side Bus Frequency	• 400/533/800 MHz
Memory	• 4 x DIMM sockets • Support single and dual channel PC3200/PC2700/PC2100 DDR SDRAM • 1st/3rd DIMM sockets in black; 2nd/4th DIMM sockets in blue
Clock Generator	• Cypress CY28404/ics ics952617
Integrated Graphics	• Intel Extreme Graphics 2 (integrated on the 865GV chipset)
Audio	• ADI AD1888 2 channel audio • 3D audio compliant with AC'97 rev. 2.3
LAN	• Intel 82562EZ 10/100 LAN
IDE	• Support all PIO modes • 2 x IDE ports support up to 4 devices • Support Ultra ATA 33/66/100 (IDE1 black, IDE2 white)
Expansion Slots	• 3 x PCI slots
BIOS	• 4Mbit flash EEPROM • AMI BIOS, PnP, ACPI, SMBIOS 2.3, Boot Block, DMI
Manageability	• WfM 2.0, DMI 2.0, SMBus
Industrial Standard	• PCI 2.3 compliant • USB 2.0
Rear Side I/O Ports	• 1 x PS/2 keyboard port • 1 x PS/2 mouse port • 4 x USB 2.0 ports • 1 x RJ-45 10/100 port • 1 x serial port • 1 x parallel port • 1 x DB 15 pin analog VGA port • 3 x audio ports
On Board I/O Interfaces	• 1 x ATX power connector • 1 x +12V power connector • 1 x Floppy connector • 1 x Front panel connector, Switch, LED (ON/Flash/OFF) • 2 x Fan headers for CPU, chassis, with voltage/fan speed control • 1 x ATAPI headers-CD IN/AUX IN • 1 x header to support 2 USB 2.0 ports at front side • 1 x MONO-OUT header with amplifier
Board Size	• uATX form factor 245mm x 245mm • 4-layer PCB with green color
Additional Features	• Bootable without keyboard, mouse or monitor • Keyboard/mouse/USB wake up • Support S1, S3, S4 and S5 • ACPI status • Hardware monitor capability • CPU fan speed control

System Details

Network Interface	Hardware Highlights	Integrated Intel PRO/100 Network Connection
		• 82562EZ Platform LAN Connect device • IEEE 802.3 10BASE-T compliant physical layer interface • IEEE 802.3u Auto-Negotiation and 100BASE-TX support • Digital adaptive equalization control • Link status interrupt capability • XOR Tree mode support for board testing • 3-port LED support (speed, link and activity) • 10BASE-T auto-polarity correction • Diagnostic loopback mode • 1:1 transmit transformer ratio support • Low power (300 mW) typical in active transmit mode • Reduced power(less than 50 mW) in "unplugged mode" • Automatic detection of "unplugged mode" • 3.3V device • Platform LAN connect interface support
	Features	• 3-port LED support (speed, link, and activity) • WfM Baseline and NetPC Specification compliant • ACPI support • Magic Packet filtering for Wake on LAN support • ARP and flexible frame support • Automatic detection of "unplugged mode" • Low power (less than 300 mW in active transmit mode) • Platform LAN connect interface support • Low power 3.3 V device
Power Supply		• ATX Power Supply – PFC/non-PFC with a 115v/230v line switch
		• Passive Power Factor Correction (PFC) – with line switch set to 230V – No PFC in 115V line switch position • 90 to 132VAC, or 180 to 264VAC operating voltage range • 100 to 127 VAC, or 200 to 240VAC rated voltage range • 50-60 Hz rated line frequency • 47-63 Hz operating line frequency range • 250 watt maximum rated power • 80-mm power supply fan – variable speed for optimum acoustics
Power Conservation 'Energy Saver'		• Energy Star compliant • APM 1.2 support • Screen blanking • Hard drive 'Idle' mode • System Idle mode • Blue Angel compliant (<5w in S5 – power off) • ~2 watt power consumption in ES mode – suspend to RAM (S3) (instantly available PC) • Processor/Cache memory power-down (S3)
System Environmental Specs		• Values are subject to change without notification and are for reference only. • Performance of system, options, and ancillary equipment will vary depending on the system configuration. • Levels presented do not account for non-HP/Compaq installed hardware.

System Details

Ambient Air Temperature	Operating	50° to 95°F (10° to 35°C) at sea level with an altitude de-rating of 1.0°C per every 1000 ft (300 m) above sea level to a maximum of 10,000 ft (3000 m), no direct sustained sunlight. Maximum rate of change is 10°C/Hr. The upper limit may be limited by the type and number of options installed.
	Storage	-22° to 140°F (-30° to 60°C) – Maximum rate of change: 20°C/Hr.
Humidity	Operating	10% to 90% relative humidity (Rh), 30°C maximum wet bulb temperature, non-condensing
	Storage	5% to 95% relative humidity (Rh), 38.7°C maximum wet bulb temperature, non-condensing
Altitude	Operating	0 to 10,000 feet (0 to 3048 m) – This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1500 ft/min.
	Non-Operating	0 to 30,000 feet – Maximum allowable altitude change rate is 1500 ft/min.
Shock	Listed are the levels of shock the product can withstand with NO damage being incurred. The values represent peak input acceleration during an 2–3 ms half-sine shock pulse, 11 ms trapezoidal shock pulse.	
	Non-Operating	80G's (Half-sine Shock) 30G's (Trapezoidal Shock)
Vibration	Listed are the levels of vibration the product can withstand with NO damage being incurred. The values represent a flat random vibration input acceleration profile across the given frequency range.	
	Operating	Random vibration at 5Hz@0.0001G ² /Hz, 10Hz@0.0005G ² /Hz, 100Hz@0.0005G ² /Hz, 300Hz@0.00001G ² /Hz 5Hz to 300Hz, (0.25G's nominal).
	Non-Operating	Random vibration at 0.008G ² /Hz, 10Hz to 500Hz, (2 Grms nominal).
Acoustic Noise	Listed are the declared A-WEIGHTED SOUND POWER LEVELS (LWAd) and declared average desktop seated operator position A-WEIGHTED SOUND PRESSURE LEVELS (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).	
	IDLE (Fixed disk drive spinning)	LWAd = 4.3 Bels, Desktop Average LpAm = 32 dBA
	FIXED DISK (Random write)	LWAd = 5.0 Bels, Desktop Average LpAm = 40 dBA
	CD-ROM (Sequential Reads)	LWAd = 5.4 Bels, Deskside Average LpAm = 44 dBA

System Details

Service and Support

On-site Warranty^{Note 1} : This 1-1-1 limited warranty delivers on-site, next business-day^{Note 2} service for parts and labor and includes free telephone support^{Note 3} 24 x 7. Global coverage^{Note 2} ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. One-year onsite and labor are not available in all countries.

NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.

NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.

NOTE 3: Technical telephone support applies only to HP-configured Compaq and third-party HP-qualified hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

After-Market Options

Communications	PCI High Speed 56K International SoftModem (includes low profile bracket)	EK694AA
	Wireless A+G PCI Adapter	EA118AA
	Intel Pro 1000 GT Gigabit NIC (FH) Card	AG393AA
Hard Disk Drives	<i>SMART III Ultra ATA/100 Hard Drive</i>	
	80-GB 7200 rpm SMART III Ultra ATA/100 Hard Drive with DPS	DC181A
	160-GB 7200 rpm SMART III Ultra ATA/100 Hard Drive with DPS	DC189A
Removable Storage Devices	<i>Diskette Drive</i>	
	1.44 MB Diskette Drive (external)	DC141B
	1.44 MB Internal Floppy Drive	AG295AA
	<i>USB Drive Key</i>	
	512-MB HP Drivekey II (USB 2.0)	ED516AA
	1-GB HP Drive Key II (USB 2.0)	AG382AA
Security	HP Business PC Security Lock Kit	EV265AA
Input Devices	<i>Keyboards</i>	
	HP 04 Standard Keyboard – PS/2	DT527A#ABA
	HP 04 Standard Keyboard – USB	DT528A#ABA
	<i>Mice</i>	
	HP PS/2 2-Button Scroll Mouse	DD440B
	HP PS/2 2-Button Optical Scroll Mouse	EY703AA
	HP USB 2-Button Optical Scroll Mouse	DC172B
Memory	<i>PC2700 (333MHz) DDR SDRAM non-ECC</i>	
	256-MB DDR SDRAM PC2700 (333-MHz) non-ECC	DC339A
	512-MB DDR SDRAM PC2700 (333-MHz) non-ECC	DC340A
	<i>PC3200 (400MHz) DDR SDRAM non-ECC</i>	
	256-MB PC3200 DDR400 DIMM	DE466G
	512-MB PC3200 DDR400 DIMM	DE467G
	1-GB PC3200 DDR400 DIMM	DE468G
Audio	Satellite Speakers	ZD929AA#ABA

After-Market Options

Optical Drives	CD-ROM Drive	48X	DC143B
	CD-RW Drive	48X/32X/48X	DL975B
	Combo Drive	48X/32X CD-RW & DVD-ROM	DL976B
	DVD-ROM Drive	16X/48X DVD-ROM	PR596A
	DVD+/-RW	16X DVD+/-RW Drive (Dual Format, Double Layer, LightScribe)	PR595A
	Internal Media Card Reader Drive (includes PCI Card)		EM718AA
Miscellaneous	USB to Serial Adapter, 3ft		EM449AA
	USB Gold Series A/B Device Cable		AH121AA
	Cat5e Patch Cable		AH122AA
	Firewire (1394) Cable		AH123AA
	7-outlet Surge Protector		AG290AA#ABA
Monitors	CRTs		
	HP s7540 17" (16.0" vis) CRT Monitor		PF997AA#ABA
	HP v7650 17" (16.0" vis) Flat-face CRT Monitor		PF996AA#ABA
	TFTs		
	HP L1506 15" TFT Flat Panel Monitor – Analog only		PX848AA#ABA
	HP L1706 17" TFT Flat Panel Monitor – Analog only		PX849AA#ABA
	HP L1740 17" TFT Flat Panel Display – Analog/Digital		PL766AA#ABA
	HP L1755 17" TFT Flat Panel Display – Analog/Digital		PL777AA#ABA
	HP L1906 19" TFT Flat Panel Display – Analog only		PX850AA#ABA
	HP L1940T 19" TFT Flat Panel Display – Analog/Digital		EM869AA#ABA
	HP L1955 19" TFT Flat Panel Display – Analog/Digital		PD974AA#ABA
	HP L2065 20" TFT Flat Panel Display – Analog/Digital		EF227A4#ABA
	HP LP2465 24" TFT Widescreen Flat Panel Display – Analog/Digital		EF224A4#ABA
	HP L5006tm 15" Touch Screen Flat Panel Display		RB146AA#ABA
	GSA Monitors		
	HP L717g 17" GSA Flat Panel Monitor		EE191AA#ABA
	HP L919g 19" GSA Flat Panel Monitor		EE192AA#ABA
	Options		
	HP Flat Panel Speaker Bar		EE418AA
	HP CRT Monitor Multimedia Base		PM552AA

After-Market Options

HP Care Pack Services	9x5 Next-Business-Day On-Site Coverage - 3 Years	U6578E
	9x5 Next-Business-Day On-Site Coverage - 4 Years	U7923E
	9x5 Next-Business-Day On-Site Coverage - 5 Years	U7925E
	9x5 Next-Business-Day On-Site Coverage - 3 Years + Monitor	U4853E
	9x5 Next-Business-Day On-Site Coverage - 4 Years + Monitor	U7922E
	9x5 Next-Business-Day On-Site Coverage - 5 Years + Monitor	U7924E
	Hardware Installation	U4865E
	Hardware Installation - (2 or more)	U4866E
	Post Warranty 9x5 Next-Business-Day On-Site Coverage - 1 Year	U4854PE
	Post Warranty 9x5 Next-Business-Day On-Site Coverage - 1 Year + Monitor	U4855PE

Memory

865GV chipset

DDR SYNCH DRAM NON-ECC MEMORY

It is not necessary to add memory in pairs. Memory upgrades are accomplished by adding single or multiple DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations. The HP Compaq dx2000 supports non-ECC 333MHz (PC2700) and 400MHz (PC3200) DDR memory.

For best performance, add in pairs, add in different channel in matching slots (color coded), and do not mix speeds.

MAXIMUM MEMORY

Supports up to 4-GB of DDR SYNCH DRAM.

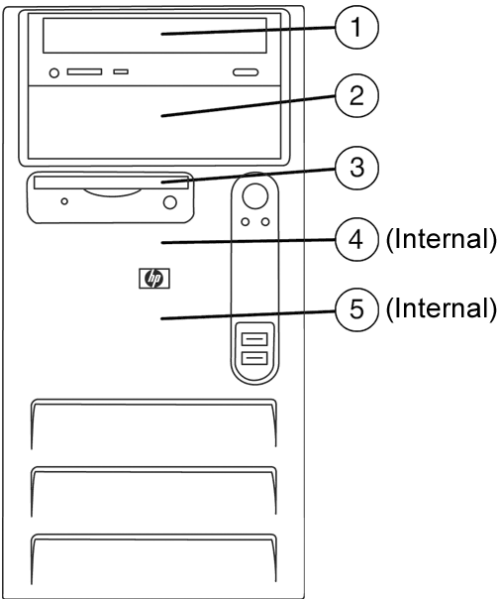
POSSIBLE MEMORY CONFIGURATIONS

NOT ALL MEMORY CONFIGURATIONS POSSIBLE ARE REPRESENTED BELOW

DIMM Size	Slot			
	Channel A		Channel B	
	1	2	3	4
128-MB	128-MB			
256-MB	128-MB *		128-MB *	
512-MB	512-MB			
512-MB	256-MB *		256-MB *	
1-GB	512-MB *		512-MB *	
2-GB	512-MB *	512-MB *	512-MB *	512-MB *

- HP recommends dual channel configurations for maximum performance.
- For Optimized Performance, please pair 533 FSB processors with non-ECC 333Mhz memory and 800FSB processors with non-ECC 400Mhz memory.

Storage



HP Compaq Business Desktop dx2000

	Maximum Quantity Supported	Position Supported	Controller
Drive Support			
Diskette Drives	1	3	ICH5
CD-ROM Drives	2	1, 2	IDE ATAPI
DVD-ROM Drives	2	1, 2	IDE ATAPI
CD-RW/Combo Drives	2	1, 2	IDE ATAPI
DVD+/-RW Drives	2	1, 2	IDE ATAPI
Ultra ATA/100 Hard Drives	2	4, 5	Ultra ATA/100

Technical Specifications - Audio

Integrated ADI AD1888 Audio	Type	Integrated
	AC '97 Stereo Codec	Yes
	OPL3 FM Synthesis Support	Yes
	Sound Blaster Compatibility	Yes
	Audio Jacks	Mic-In (20-K ohm Input Impedance)
		Line-In (12-K ohm Input Impedance)
		Line-Out * (less than 800 ohms Output Impedance, expects at least a 10-K ohm load)
		Headphone-Out (2.5 Ohms Output Impedance, expects at least a 32 ohm load)
		NOTE: *Internal Speaker Amplifier is for Internal Speaker only. External Speakers need to be powered externally.
	Sampling	7KHz-48KHz
	Compression	ADPCM, ESPCM
	Wavetable Syntheses (software)	Yes
	3D Positional Sound	No
Analog Audio	Number of Channels on Line-Out (mono/stereo)	Stereo (Left & Right channels)
	Internal Audio Speaker Power Rating	3W
	Internal Tuned Port Speaker	Yes
	External Speaker Jack (Line-Out)	Yes

Technical Specifications - Communications

PCI High Speed 56K Worldwide Controllerless WinModem	Data Transmission	High speed 56K modem technology speeds: 56,000 Kbps maximum downstream data, controllerless NOTE: 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
	Data Speeds	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/12,000/9,600/7,200/4,800/2,400/1,200/300
	Data Standards	ITU high speed 56K modem, ITU-T, V.34bis, V.22bis, V.22bis, V.21, V.23, Bell 212A, and Bell 103
	Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
	Fax Mode Capabilities	Group3 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2, Class 1
	Error Correction and Data Compression	V.44 (software upgradeable), 4.2bis, V.42 and MNP2-5
	Power Management	APM and ACPI states D0, D1, D2, and D3; meets PCI 2.2 requirements and PC'99 requirements
	Upgradeability	Software driver upgradeable for high speed 56K modem and future enhancements
	Video	ITU-T V.80 video ready interface
	Other	TIA/EIA 602 standard AT command set Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface Optional ring wakeup signal
	Operating Temperature	32° to 158° F (0° to 70° C)
	Operating Humidity	20% to 90%, non-condensing
	Power	Requires a 3.3-V auxiliary power rail on PCI bus Uses only one PCI load (i.e., one grant/request pair), one shared IRQ, one electrical load
	Chipset	Agere Systems 1648C (Mars 3.2) - Integrated PCI interface with 5-V tolerant buffers and CardBus support
	Dimensions (L X H)	Complies with PCI low profile specifications - 6.7 x 2.3 in (17.0 x 5.8 cm) and supports high-and low-profile brackets
	Connection	Dual, parallel RJ-11 support with auxiliary Tip/Ring connector
	Other Features	Digital line protection, call progress monitoring via on-board piezo device, transformer-based DAA design, support for high profile and low profile brackets, PnP ID supports via external EEPROM
	Safety	UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark)
	EMC	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
	Telecom	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals Not available in India, Russia, Slovakia, Slovenia, Belarus, Brunei, Croatia, Ecuador, Latvia, Lithuania, Morocco, Peru, Phillipines, Sri Lanka, Ukraine, Malaysia (use DC132B or DC132C instead)
	Health	Bare PCB material compliant to 94V-0 or better (marked as such), Microsoft Windows Me health compliant

Technical Specifications - Communications

Other	PC'99 compliant, PCI version 2.2, WHQL approved; support for ACPI revision 1.1 DC131C
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Intel Pro 1000 MT NIC	Connector	RJ-45
	Controller	Intel 82540EM Gigabit Controller
	Memory	Integrated 96Kb frame buffer memory
	Data rates supported	10/100/1000 Mbps
	Compliance	IEEE 802.1A, 802.1P, 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	Bus architecture	PCI 2.2
	Data path width	32-bit, 33/66 MHz bus interface
	Data transfer mode	Bus-master DMA
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	Power requirement	1.48 watts @ +3.3V AUX supply with 5V tolerance
	Boot ROM support	Yes
	Network transfer rate	10BASE-T (half-duplex) 10 Mbps
		10BASE-T (full-duplex) 20 Mbps
		100BASE-TX (half-duplex) 100 Mbps
		100BASE-TX (full-duplex) 200 Mbps
		1000BASE-T, 1000 Mbps
Environmental	Operating temperature	32° to 131°F (0° to 55° C)
	Operating humidity	85% at 131° F (55° C)
Dimensions		6.4 x 4.8 x 0.8 inches (16.3 x 12.1 x 1.9 cm)
Management capabilities		ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Intel PROset II utility

Technical Specifications - Graphics

Integrated Intel Extreme Graphics 2	3D/2D Controller	Support is fully compliant with Microsoft standard API such as Direct Draw, GDI/GDI+ and Direct Show
	VGA Controller	Integrated
	Bus Type	none
	RAMDAC	Integrated 350-MHz DAC
	Memory	Graphics memory is shared with system memory. Graphics memory usage can vary from 8 – 64MB depending on the amount of system memory installed and system load. 16MB is pre-allocated for graphics use at system boot time. Additional memory is allocated for graphics using Intel's Dynamic Video Memory Technology (DVMT) to balance the optimum amount of memory between graphics and other system use. With a 128MB system, graphics memory usage will be 8MB – 32MB depending on system load. With 256MB or more, graphics memory usage will be 8MB – 64MB depending on system load.
	Controller Clock Speed	266 MHz
	Overlay Planes	Single Overlay support with 5x3 filtering
	Max Color Depth	32-bits/pixel
	Maximum Vertical Refresh Rate	85Hz at up to 1920 x 1440, 75Hz at 2048 x 1536. Varies with mode and configuration. See table below
	Multi-display Support	Support for one CRT via the motherboard's VGA connector.
	Graphics API Support	Complete Microsoft DirectX® support, including DirectX 8.1; complete OpenGL® 1.3 support. Compatible with DirectX 9.

Resolutions Supported (At various color depths & memory configurations) (NOTE: Refresh rates higher than 85Hz may be obtainable in some modes and configurations but are not recommended.)	Resolution	Maximum Refresh Rate (Hz)	Maximum Refresh Rate (Hz)	Maximum Refresh Rate (Hz)
		DR266 Single Channel (8/16/32 bits/pixel)	DDR 266 Dual/DDR 333 Single Channel (8/16/32 bits/pixel)	DDR 333 Dual Channel (8/16/32 bits/pixel)
	640 x 480	85/85/85	85/85/85	85/85/85
	800 x 600	85/85/85	85/85/85	85/85/85
	1024 x 768	85/85/85	85/85/85	85/85/85
	1152 x 864	85/85/85	85/85/85	85/85/85
	1280 x 720	85/85/85	85/85/85	85/85/85
	1280 x 768	85/85/85	85/85/85	85/85/85
	1280 x 960	85/85/85	85/85/85	85/85/85
	1280 x 1024	85/85/85	85/85/85	85/85/85
	1400 x 1050	85/85/85	85/85/85	85/85/85
	1600 x 900	85/85/85	85/85/85	85/85/85
	1600 x 1200	85/85/85	85/85/85	85/85/85
	1856 x 1392	75/75/60	75/75/60	75/75/60
	1920 x 1080	85/85/75	85/85/85	85/85/85
	1920 x 1200	75/75/60	75/75/75	75/75/75
	1920 x 1440	85/85/60	85/85/60	85/85/60
	2048 x 1536	75/75/NA	75/75/NA	75/75/60

Technical Specifications - Input/Output Devices

Basic Windows PS/2 Keyboard (SK-1688A)	Physical characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
		Dimensions (L x W x H)	18.1 x 6.7 x 1.3 in (46 x 17 x 3.4 cm)
		Weight	1.9 lb (0.86 kg) minimum
	Electrical	Operating voltage	+ 5VDC $\pm$ 5%
		Power consumption	50-mA maximum (with three LEDs ON)
		System interface	PS2 6-pin DIN connector
		ESD	CE level 4, 15-kV air discharge
		EMI – RFI	Conforms to FCC rules for a Class B computing device
		Microsoft® PC 99 – 2001	Functionally compliant
	Mechanical	Languages	38 available
		Keycaps	Low-profile design
		Switch actuation	55-g nominal peak force with tactile feedback
		Switch life	20 million keystrokes (using Hasco modified tester)
		Switch type	Contamination-resistant switch membrane
		Key-leveling mechanisms	For all double-wide and greater-length keys
		Cable length	4.5 ft (1.35 m)
		Microsoft PC 99 – 2001	Mechanically compliant
	Environmental	Acoustics	43-dBA maximum sound pressure level
		Operating temperature	50° to 122° F (10° to 50° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Non-operating humidity	20% to 80% (non-condensing at ambient)
		Operating shock	40 g, six surfaces
		Non-operating shock	80 g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	14.9 in (38 cm) on carpet, six-drop sequence
		Drop (in box)	29.9 in (76 cm) on concrete, 16-drop sequence
	Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
	Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

Technical Specifications - Input/Output Devices

HP 2-Button Scroll Mouse (PS/2 or USB)	Scroll Wheel	8 mm
	Maximum Rotation Speed	30 mm/s
Electrical	Switch Type	Light force micro-switch
	Switch Life	1 million operations
	Mechanical Life	Minimum 200,000 revolutions
	Environmental	Operating Temperature 50° to 122° F (10° to 50° C)
		Non-operating Temperature -22° to 140° F (-30° to 60° C)
	Operating Humidity	10% to 90% (non-condensing at ambient)
	Non-operating Humidity	20% to 80% (non-condensing at ambient)
	Operating Shock	40 g, 6 surfaces
	Non-operating Shock	80 g, 6 surfaces
	Operating Vibration	2 g peak acceleration
	Non-operating Vibration	4 g peak acceleration
	Electrical	Operating Voltage 5VDC $\pm$ 10%
		Power Consumption 15mA
		System Consumption PS/2 mini-din connector or USB Type-A plug connector
Mechanical	ESD	CE level 4, 15 kV air discharge
	EMI-RFI	Conforms to FCC rules for a Class B computing device
	PC98	Functionally compliant
	Resolution	400 $\pm$ 20% DPI
	Tracking Speed	10 in/s maximum
	Acceleration	100 in/s
	Switch Actuation	85 g nominal peak force
	Switch Life	1,000,000 operations (using Hasco modified tester)
	Cable Length	2 m
	PC98-99	Mechanically compliant
Regulatory Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BCIQ, C-Tick	

Technical Specifications - Hard Drives

5400 rpm SMART III Ultra ATA/100 Hard Drives

40-GB	Capacity	40 GB
	Dimensions (H x W)	1.0 x 3.5 in (2.5 x 8.9 cm)
	Interface	Ultra ATA/100
	Transfer Rate Synchronous (Maximum)	100 MB/s
	Seek Time (typical reads, including settling)	Single Track 1.2 ms Average 8 ms Full-Stroke 18 ms
	Rotational Speed	5400 rpm
	Logical Blocks	78,165,360
	Operating Temperature	41° to 131° F (5° to 55° C)

7200 rpm SMART III Ultra ATA/100 Hard Drives

40-GB	Capacity	40 GB
	Dimensions (H x W)	1.0 x 3.5 in (2.5 x 8.9 cm)
	Interface	Ultra ATA/100
	Transfer Rate Synchronous (Maximum)	100 MB/s
	Seek Time (typical reads, including settling)	Single Track 0.8 ms Average 9 ms Full-Stroke 17 ms
	Rotational Speed	7200 rpm
	Logical Blocks	78,140,160
	Operating Temperature	41° to 131° F (5° to 55° C)

80-GB	Capacity	80 GB
	Dimensions (H x W)	1.0 x 3.5 in (2.5 x 8.9 cm)
	Interface	Ultra ATA/100
	Transfer Rate Synchronous (Maximum)	100 MB/s
	Seek Time (typical reads, including settling)	Single Track 0.8 ms Average 9.0 ms Full-Stroke 17.0 ms
	Rotational Speed	7200 rpm
	Logical Blocks	156,301,488
	Operating Temperature	41° to 131° F (5° to 55° C)

160-GB	Capacity	160 GB
	Dimensions (H x W)	1.0 x 3.5 in (2.5 x 8.9 cm)
	Interface	Ultra ATA/100

Technical Specifications - Hard Drives

Transfer Rate Synchronous (Maximum)	100 MB/s	
Seek Time (typical reads, including settling)	Single Track	0.8 ms
	Average	9.0 ms
	Full-Stroke	17.0 ms
Rotational Speed	7200 rpm	
Logical Blocks	78,140,160	
Operating Temperature	41° to 131° F (5° to 55° C)	

Technical Specifications - Optical Storage

48X Max CD-ROM Drive Interface	ATAPI IDE
Data Buffer	16.6 Mbps
Data Transfer Rate	Sustained – 1200 Kbps minimum (audio) Variable (CD) – 3,000 to 7,200 Kbps
Disk Rotation Technology	CAV (Constant Angular Velocity)
Access Time (ms)	Random: <100 ms Full-stroke seek: <150 ms
Average Access Time	< 80 ms
Cache Buffer (standard/maximum)	128 KB
Disk Formats Read	Multi-session Photo CD, multi-read CD-ROM, CD text, audio CD, CD-I, CD-RW, CD-R, CD-Extra, CD-ROM XA
Disk Formats Written	None
Disk Capacity (CD)	650 MB
Block Size	Mode 1 – 2,048, 2,352 bytes Mode 2 – 1, 2,088, 2,328, 2,336, 2,340, 2,353 bytes Mode 2 – 2, 2,328, 2,336, 2,340, 2,352 bytes CD-DA – 2,352, 2,368 bytes
Diameter	12 cm; 8 cm
Thickness	1.2 mm
Track Pitch	1.6 µm
Audio Output Level	Line-out – 0.7 V @ 47 Kohm Headphone – 0.6 V @ 32 ohm
Startup Time	<7 seconds (typical); < 30 seconds with multi-session
Operating Conditions	Temperature 41° to 120° F (5° to 50° C)
	Relative Humidity 10% to 90%
Dimensions (H x W x D, maximum)	1.7 x 5.9 x 8.0 in (4.3 x 15.0 x 20.3 cm)
Weight	2.6 lb (1200 g)
MPEG Playback Graphics Solution Support	None

48X/32X/48X CD-RW Drive	Orientation	Either horizontal or vertical
	Disc Loading Mechanism	Half-height, tray load
	Interface Type	ATAPI IDE
	Dimensions — external (W x H x D)	7.99 x 5.88 x 1.71 in (203 x 149.5 x 43.5 mm)
	Weight	2.6 lb (1.2 kg)
	Disc Diameter	12 cm, 8 cm
	Disc Thickness	1.2 mm
	Track Pitch	1.6 m µm

Technical Specifications - Optical Storage

Disc Center Hole Diameter	15 mm
Reference Scanning Velocity	1.2 m/s
Recording/Playing Time	80 minutes with CD-R media
Read Only Disc Parameters	Formats and Modes Supported CD-ROM – Mode 1; CD-ROM XA – Mode 2 (forms 1 and 2); CD digital audio; CD Extra; CD-I – Mode 2 (forms 1 and 2) and CD-I-Ready; Photo CD (single and multi-session); video CD Capacity 185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm) Block Size Mode 1 – 2,048 and 2,352 bytes; mode 2, form 1 – 2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2 – 2,328; 2,336; 2,340 and 2,352 bytes; CD-DA – 2,352 and 2,368 bytes
Writeable Disc Parameters	Disc Type CD-R and CD-RW Write Methods Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet Format and Modes Supported CD-ROM (mode 1); CD-ROM XA (mode 2, forms 1 and 2); CD digital audio, CD-I (mode 2, forms 1 and 2); video CD Capacity 185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm) Block Size Mode 1 – 2,048 bytes; mode 2, form 1 – 2,048 and 2,352 bytes; mode 2, form 2 – 2,352 bytes; CD-DA – 2,352 bytes
Access Times (typical)	Random < 120 ms Full Stroke < 200 ms
Maximum Data Transfer Rates	CD-RW Write 4800 KB/s (32X) Max CD-ROM, CD-R read 7200 KB/s (48X) Max CD-RW read 7200 KB/s (32X) Max CD-R write 7200 KB/s (48X) Max
Data Transfer Modes	ATA PIO mode 4 (16.7MB/s); ATA multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA mode 0 (16.7 MB/s); ATA UltraDMA mode 1 (24 MB/s); ATA UltraDMA mode 2 (33 MB/s) – default.
Cache Buffer	2 MB (minimum)
Start-up Time (single)	< 7 seconds typical
Start-up Time (multi-session)	< 30 seconds typical
Stop Time	< 4 seconds

Technical Specifications - Optical Storage

Power	Source	Four-pin, DC power receptacle
	DC power requirement	5 VDC $\pm$ 5%—100 mV ripple p-p 12 VDC $\pm$ 5%—200 mV ripple p-p
	DC current	5 VCD < 1A (typical) < 1600 mA (maximum) 12 VCD < 600 mA (typical) < 1.4A (maximum)
	Total Drive Power (Standby mode)	< 2.5 watt
Audio Output Level		0.7 Vrms
Configuration Jumper Block		Master, slave and cable select modes
Data Interface Connector		50-pin IDE interface
Environmental (all conditions, non-condensing)	Temperature (operating)	Operating 41° to 122° F (5° to 50° C)
	Relative Humidity (operating)	10% to 90%
	Maximum Wet Bulb Temperature (operating)	84° F (29° C)

16X/40X DVD-ROM	Height	5.25-in, half-height
	Interface Type	ATAPI
	Dimensions— External, Excluding Bezel (W x H)	5.88 x 1.71 in (149.5 x 43.5 mm)
	Disc Diameter	12 cm, 8 cm
	Disc Thickness	1.2 mm
	Track Pitch	1.6 μ m (CD), 0.74 μ m (DVD)
	Disc Center Hole Diameter	15 mm
	Disc Formats	DVD-ROM (single and dual layer); DVD-video; DVD-R version 1.0 and 2.0; DVD-RW version 1.0 and 1.1; DVD-R multi-border; DVD+RW; DVD+R ; CD-ROM Mode 1 and 2; CD-DA; CD-ROM XA Mode 2, Form 1 and 2; CD-extra; CD-text; CD-I Mode 2, Form 1 and 2; CD-I ready; video CD, CD-bridge; PhotoCD (single and multi-session); CD-R; CD-RW
	Disc Capacity	DVD-ROM 4.7 GB (DVD-5), 8.54 GB (DVD-9), 9.4 GB (DVD-10), 3.95 GB (DVD-R version 1.0), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.0 and 1.1), 4.7 GB (DVD+RW), 4.7 GB (DVD+R) CD-ROM 40 MB (Mode 1, 12 cm), 640 MB (Mode 2, 12 cm), 700 MB (80 minimum CD-R and CD-RW), 180 MB (8 cm)
	Block Size (bytes)	DVD-ROM – 2048; CD-ROM Mode 0 – 2352; CD-ROM Mode 1 – 2352, 2340, 2336, 2048; CD-ROM Mode 2 – 2352, 2340, 2336, 2048

Technical Specifications - Optical Storage

Access Times (typical reads, including settling)	DVD-ROM Single Layer	120 ms (typical)
	CD-ROM Mode 1	90 ms (typical)
	Full Stroke DVD	240 ms (seek) (typical)
	Full Stroke CD	160 ms (seek) (typical)
Maximum Data Transfer Rates	CD-ROM Read	6000 KB/s (40X) Max
	DVD-ROM Read	21,600 KB/s (16X) Max
Data Transfer Modes	PIO Mode 4 (16.6 MB/s); Multi-word DMA mode 2 (16.6 MB/s); UltraDMA Mode 3 (44.4 MB/s)	
Power	Source	Four-pin, DC power receptacle
	DC Power Requirement	5 VDC $\pm$ 5% – 100 mV ripple p-p
		12 VDC $\pm$ 5% – 200 mV ripple p-p
	DC Current	5 VDC – <800 mA typical, < 1000 mA maximum 12 VDC – < 870 mA typical
Audio Output Level	0.7 Vrms (typical)	
Configuration Jumper Block	Master, slave, and cable select modes	
Data Interface Connector	40-pin, shrouded and keyed, flat ribbon	
Environmental (all conditions non-condensing)	Temperature (operating)	41° to 122° F (5° to 50° C)
	Relative Humidity (operating)	10% to 90%
	Maximum Wet Bulb Temperature (operating)	86° F (30° C)
Certifications, Approvals	MMC II support, multi-read certification, Microsoft WHQL certification, ACA AS/NZS 3548 class B, CNS 13438, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, SEMKO, NEMKO, DEMKO, FIMKO, EN 60825-1, UL 60950, and CSA C22.2 60950-2000.	
Kit Contents	16X/40X DVD-ROM Drive, Roxio CinePlayer software, and installation guide.	

48X/32X/48X/16X Combo CD-RW/DVD-ROM

	5.25-inch, half-height, tray
Color	Carbonite
Orientation	Either horizontal or vertical
Interface Type	ATAPI
Dimensions (W x H x D)	5.77 x 1.71 x 7.36 in (146.5 x 43.5 x 187 mm) (external, excluding bezel)
Disc Diameter	12 cm, 8 cm
Disc Thickness	0.05 in (1.2 mm)
Track Pitch	1.6 μ m (CD), 0.74 μ m (DVD)
Disc Center Hole Diameter	0.6 in (15 mm)
Reference Scanning Velocity	1.2 m/s (CD); 3.49 m/s (DVD SL); 3.84 m/s (DVD DL)

Technical Specifications - Optical Storage

Read Only Disc Parameters	Formats and Modes Supported	CD-ROM – Mode 1; CD-ROM XA – Mode 2 (forms 1 and 2); CD-Bridge; CD digital audio; CD Extra; CD-I – Mode 2 (forms 1 and 2) and CD-I-Ready; Photo CD (single and multi-session); video CD; DVD (single- and double-layer); DVD-R; DVD-RW; DVD-RW Multi-Session; DVD+R; DVD+R Multi-Session, and DVD+RW
	Capacity	180 MB (mode 2, 8 cm); 540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (Mode 2, 12 cm); 4.7 GB (DVD-5); 8.54 GB (DVD-9); 9.4 GB (DVD-10)
	Block Size	Mode 1 – 2,048 and 2,352 bytes; mode 2, form 1 – 2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2-2,328; 2,336; 2,340 and 2,352 bytes; CD-DA-2,352 bytes; DVD-2,048 bytes
Writeable Disc Parameters	Disc Type	CD-R and CD-RW
	Write Methods	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
	Format and Modes Supported	CD-ROM (mode 1); CD-ROM XA (mode 2, forms 1 and 2); CD digital audio, CD-I (mode 2, forms 1 and 2); video CD; CD-Bridge; Video CD
	Capacity	180 MB (mode 2, 8 cm); 540 MB (mode 1, 12 cm); 650 MB (mode 2, 12 cm); 700 MB (mode 2, 12 cm)
	Block Size	CD-DA – 2,352 bytes; mode 0 – 2,336 and 2,352 bytes; mode 1 – 2,048 and 2,352 bytes; mode 2 – 2,336 and 2,352; mode 2, form 1 – 2,048 and 2,352 bytes; mode 2, form 2 – 2,324 and 2,352 bytes
Access Times (typical reads, including settling)	Random DVD	< 140 ms (typical)
	Random CD	< 125 ms, (typical)
	Full Stroke DVD	< 250 ms (seek)
	Full Stroke CD	< 210 ms (seek)
Maximum Data Transfer Rates	CD-R write	7200 KB/s (48X) Max
	CD-RW write	1500 KB/s (10X) Max
	CD-ROM, CD-R, CD-RW read	7200 KB/s (48X) Max
	DVD ROM read	21,632 KB/s (16X) Max
	DVD RW	

Technical Specifications - Optical Storage

Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA mode 0 (16.7 MB/s); ATA UltraDMA mode 1 (24 MB/s), mode 2 (33 MB/s); ATA UltraDMA Mode 3 44 Mbytes/s (default)
	Cache Buffer 2 MB (minimum)
	Startup Time (single) < 7 seconds (typical)
	Startup Time (multi-session) < 30 seconds (typical)
	Stop Time < 4 seconds
Power	Source Four-pin, DC power receptacle
	DC Power Requirement 5 VDC $\pm$ 5% – 100 mV ripple p-p 12 VDC $\pm$ 5% – 200 mV ripple p-p
	DC Current 5 VDC (< 1000 mA typical, < 1600 mA maximum) 12 VDC (< 600 mA typical, < 1400 mA maximum)
	Total Drive Power (standby mode) < 2.5 Watt
	Audio Output Level 0.7 Vrms (typical)
Configuration Jumper Block	Master, slave, and cable select modes
Data Interface Connector	40-pin, shrouded and keyed, flat ribbon
Environmental (all conditions non-condensing)	Temperature (operating) 41° to 122° F (5° to 50° C)
	Relative Humidity (operating) 10% to 90%
	Maximum Wet Bulb Temperature (operating) 86° F (30° C)
	Certifications, Approvals MPC-3 compliant, multi-read requirements, ACA AS/NZS 3548, ANSI C63.4-1992, ATAPI Spec SFF-8020, ATA Spec X3T9.2, CB Bulletin No. 92A, CSA C22.2 No. 950-1995, C.I.S.P.R. Pub 22, EMKO-TSE 207/94, TUV or VDE EN60 950, EN60825-1, Microsoft PC2001 certification, Microsoft Logo for Windows XP, 2000, and NT4

16X DVD+/-RW Drive	Height	5.25-inch, half-height, tray-load
	Orientation	Either horizontal or vertical
	Interface type	ATAPI/EIDE
	Disc recording capacity	8.5 GB DL or 4.7 GB standard
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)
	Weight (max)	2.6 lb (1.2 kg)

Technical Specifications - Optical Storage

Write speed	DVD+R	Up to 16X
	DVD+RW	Up to 4X
	DVD+R DL	Up to 2.4X
	DVD-R	Up to 8X
	DVD-RW	Up to 4X
	CD-R	Up to 40X
	CD-RW	Up to 24X
Reads	DVD+R/-R/+RW/-RW	Up to 16X
	DVD-ROM	Up to 16X
	CD-R/RW	Up to 40X
Access time (typical reads, including settling)	Random	DVD: < 130 ms (typical), CD: < 120 ms (typical)
	Full Stroke	DVD: < 240 ms (seek), CD: < 200 ms (seek)
	Startup Time	Single-session: < 7 seconds (typical), Multi-session: < 30 seconds (typical)
	Stop Time	< 4 seconds
	Cache Buffer	2 MB (minimum)
	Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)
Power	Source	Four-pin, DC power receptacle
	DC Power Requirement	5 VDC $\pm$ 5%-100 mV ripple p-p 12 VDC $\pm$ 5%-200 mV ripple p-p
	DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum) 12 VDC (< 600 mA typical, 1400 mA maximum)
	Total Drive Power (standby mode)	< 2.5 Watt
	Audio output	
	Line-Out	0.7 VRMS
Environmental conditions (operating - non-condensing)	Signal-to-Noise Ratio	74 dB
	Channel Separation	65 dB
	Temperature	41° to 122° F (5° to 50° C)
	Relative humidity	10% to 90%
System configuration	Maximum wet bulb temperature	86° F (30° C)
Regulatory approvals		Intel Pentium III Processor or later with 128 MB of memory (required); 256 MB recommended 2-D or 3-D graphics cards on primary disk drive for operating system and application software; second disk drive for audio and video data
		MPC-3 compliant, multi-read requirements, ATA Spec X3T9.2, ATAPI Spec T13.1153D, ANSI C63.4-1992, UL 1950, ACA AS/NZS 3548, CB Bulletin No. 96A, CSA C22.2 No. 950-1995, CFR 47 C.I.S.P.R. Pub 22 Class B, DHHS/FDA, EMKO-TSE 07/94, TUV EN60950, EN60825-1, MIC, BSMI-CNS 13438, CE, Microsoft PC2001 certification, Microsoft Logo for Windows XP and 2000.

Technical Specifications - Optical Storage

Option kit contents

16X DVD+/-RW drive, Roxio DigitalMedia Plus, Dantz Retrospect Express Backup Software, installation guide, and DVD+R media.

Technical Specifications - Removable Storage

1.44-MB Diskette Drive	Dimensions (HxWxD)	0.7 x 4.0 x 5.5 in (17.8 x 101.6 x 139.7 mm)	
	Weight	0.56 lb (255 g)	
	Disk Used	High density (2HD)	
	Maximum Data Transfer Rate	500-Kbps internal FDD	
	Cable Length	12.9 in (33 cm)	
	Disk Rotational Speed	300 rpm	
	Required Power	Supplied from a USB port	
	Operating Position	Horizontal only	
	Recording Method	MFM (modified frequency modulation)	
	Signal Interface	USB Specification version 1.1	
	Ambient Temperature	Operating Storage	39° to 125° F (4° to 51.7° C) -8° to 140° F (-22° to 60° C)
	Temperature Gradient	Operating Storage	36° F (20° C) or less per hour (no condensation) 54° F (30° C) or less per hour (no condensation)
	Relative Humidity	Operating	20 to 80% (no condensation)-maximum wet bulb temperature of 85° F (29.4° C)
		Storage	5 to 90% (no condensation)-maximum wet bulb temperature of 104° F (40° C)
		Suspend	Initiates when continuously idle for 3.0 ms or more on the bus line
		Resume	Initiates when signal other than idle state is detected on the bus line
Safety Standards		UL and CSA	

HP Drive Key II	Dimensions (HxWxD)	0.32 x 0.63 x 2.67 in (0.8 x 1.6 x 6.8 cm)	
	Storage Capacity	256 MB	
	Weight	0.05 lb (0.02 kg)	
	Transfer Rates	Read	Capable of 6.0 MB/s sustained read speed in USB 2.0 system
		Write	Capable of 6.0 MB/s sustained write speed in USB 2.0 system
	Operating Temperature	41° to 122° F (5° to 50° C)	
	Non-operating Temperature	-22° to 140° F (-30° to 60° C)	
	Option Kit Contents	HP Drive Key II, documentation	

Technical Specifications - Removable Storage

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